WHAT IS CLAIMED IS:

1. A car control unit loading an automatic transmission having a plurality of gears and a plurality of synchronizer capable of transferring torque from a drive power source to wheels via a friction clutch, an input shaft, and an output shaft and transferring said torque from said input shaft to said output shaft and having synchronizeres capable of transferring said torque by friction to said plurality of synchronizer, said car control unit carrying out shifting by forming a torque transmission path from said input shaft to said output shaft by connection of said gears and said synchronizer, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, by at least one synchronizer, transferring said torque of said drive power source from said input shaft to said output shaft, and switching a transfer path formed by said first connection to at least one intermediate transfer path formed by said synchronizer and then switching to a transfer path formed by said second connection, further comprising:

state discrimination means for detecting or inferring a state of a frictional surface of said

synchronizer and

synchronizer selecting means for selecting a synchronizer for forming said intermediate transfer path according to a parameter indicating said state of said frictional surface detected or inferred by said state discrimination means.

2. A car control unit according to Claim 1, wherein

said parameter indicating said state of said frictional surface detected or inferred by said state discrimination means is the temperature of said frictional surface of said synchronizer, or the heat quantity of said synchronizer, or the abrasion loss of the synchronizer and

said synchronizer selection means, when said parameter is larger than a predetermined value, selects at least two synchronizeres forming said intermediate transfer path.

3. A car control unit loading an automatic transmission having a plurality of gears and a plurality of synchronizer capable of transferring torque from a drive power source to wheels via a friction clutch, an input shaft, and an output shaft and transferring said torque from said input shaft to said output shaft and having synchronizeres capable of

transferring said torque by friction to said plurality of synchronizer, said car control unit carrying out shifting by forming a torque transmission path from said input shaft to said output shaft by connection of said gears and said synchronizer, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, by at least one synchronizer, transferring said torque of said drive power source from said input shaft to said output shaft, and switching a transfer path formed by said first connection to at least one intermediate transfer path formed by said synchronizer and then switching to a transfer path formed by said second connection, further comprising:

state discrimination means for detecting or inferring a state of a frictional surface of said synchronizer and

drive power source torque control means for reducing said torque of said drive power source according to a parameter indicating said state detected or inferred by said state discrimination means.

4. A car control unit according to Claim 3, wherein

said parameter indicating said state of said frictional surface detected or inferred by said state discrimination means is the temperature of said frictional surface of said synchronizer, or the heat quantity of said synchronizer, or the abrasion loss of the synchronizer and

said drive power source torque control means, when said parameter is larger than a predetermined value, reduces said torque of said drive power source.

5. A car control unit loading an automatic transmission having a plurality of gears and a plurality of synchronizer capable of transferring torque from a drive power source to wheels via a friction clutch, an input shaft, and an output shaft and transferring said torque from said input shaft to said output shaft and having synchronizeres capable of transferring said torque by friction to said plurality of synchronizer, said car control unit having a first mode for carrying out shifting by forming a torque transmission path from said input shaft to said output shaft by connection of said gears and said synchronizer, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, by at least one

synchronizer, transferring said torque of said drive power source from said input shaft to said output shaft, and switching a transfer path formed by said first connection to at least one intermediate transfer path formed by said synchronizer and then switching to a transfer path formed by said second connection and a second mode for carrying out shifting by, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, switching a transfer path formed by said first connection to a transfer path formed by said second connection, further comprising:

state discrimination means for detecting or inferring a state of a frictional surface of said synchronizer and

shift mode switching means for switching said first shift mode and said second shift mode according to a parameter indicating said state of said frictional surface detected or inferred by said state discrimination means.

6. A car control unit according to Claim 5, wherein:

said parameter indicating said state of said frictional surface detected or inferred by said state

discrimination means is the temperature of said frictional surface of said synchronizer, or the heat quantity of said synchronizer, or the abrasion loss of the synchronizer and

said drive power source torque control means, when said parameter is larger than a predetermined value, switches said second shift mode.

7. A car control unit loading an automatic transmission having a plurality of gears and a plurality of synchronizer capable of transferring torque from a drive power source to wheels via a friction clutch, an input shaft, and an output shaft and transferring said torque from said input shaft to said output shaft and having synchronizeres capable of transferring said torque by friction to said plurality of synchronizer, said car control unit having a first mode for carrying out shifting by forming a torque transmission path from said input shaft to said output shaft by connection of said gears and said synchronizer, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, by at least one synchronizer, transferring said torque of said drive power source from said input shaft to said output

shaft, and switching a transfer path formed by said first connection to at least one intermediate transfer path formed by said synchronizer and then switching to a transfer path formed by said second connection and a second mode for carrying out shifting by, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, switching a transfer path formed by said first connection to a transfer path formed by said second connection, further comprising:

state discrimination means for detecting or inferring a state of a frictional surface of said synchronizer,

drive power source torque control means for reducing said torque of said drive power source according to a parameter indicating said state detected or inferred by said state discrimination means, and

shift mode switching means for switching said first shift mode and said second shift mode according to a parameter indicating said state of said frictional surface detected or inferred by said state discrimination means.

8. A car control unit according to Claim 7,

wherein

said parameter indicating said state of said frictional surface detected or inferred by said state discrimination means is the temperature of said frictional surface of said synchronizer, or the heat quantity of said synchronizer, or the abrasion loss of the synchronizer,

said drive power source torque control means, when said parameter is smaller than a predetermined value, reduces said torque of said drive power source in said first shift mode, and

said drive power source torque control means, when said parameter is larger than said predetermined value, switches said second shift mode.

9. A car control method loading an automatic transmission having a plurality of gears and a plurality of synchronizer capable of transferring torque from a drive power source to wheels via a friction clutch, an input shaft, and an output shaft and transferring said torque from said input shaft to said output shaft and having synchronizeres capable of transferring said torque by friction to said plurality of synchronizer, said car control method carrying out shifting by forming a torque transmission path from said input shaft to said output shaft by connection of

said gears and said synchronizer, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, by at least one synchronizer, transferring said torque of said drive power source from said input shaft to said output shaft, and switching a transfer path formed by said first connection to at least one intermediate transfer path formed by said synchronizer and then switching to a transfer path formed by said second connection, comprising the step of:

detecting or inferring a state of a frictional surface of said synchronizer and selecting a synchronizer for forming said intermediate transfer path according to a parameter indicating said detected or inferred state.

10. A car control method loading an automatic transmission having a plurality of gears and a plurality of synchronizer capable of transferring torque from a drive power source to wheels via a friction clutch, an input shaft, and an output shaft and transferring said torque from said input shaft to said output shaft and having synchronizeres capable of transferring said torque by friction to said plurality of synchronizer, said car control method carrying out

shifting by forming a torque transmission path from said input shaft to said output shaft by connection of said gears and said synchronizer, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, by at least one synchronizer, transferring said torque of said drive power source from said input shaft to said output shaft, and switching a transfer path formed by said first connection to at least one intermediate transfer path formed by said synchronizer and then switching to a transfer path formed by said second connection, comprising the step of:

detecting or inferring a state of a frictional surface of said synchronizer and reducing said torque of said drive power source according to a parameter indicating said detected or inferred state.

11. A car control method loading an automatic transmission having a plurality of gears and a plurality of synchronizer capable of transferring torque from a drive power source to wheels via a friction clutch, an input shaft, and an output shaft and transferring said torque from said input shaft to said output shaft and having synchronizeres capable of transferring said torque by friction to said plurality

of synchronizer, said car control method having a first mode for carrying out shifting by forming a torque transmission path from said input shaft to said output shaft by connection of said gears and said synchronizer, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, by at least one synchronizer, transferring said torque of said drive power source from said input shaft to said output shaft, and switching a transfer path formed by said first connection to at least one intermediate transfer path formed by said synchronizer and then switching to a transfer path formed by said second connection and a second mode for carrying out shifting by, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, switching a transfer path formed by said first connection to a transfer path formed by said second connection, comprising the step of:

detecting or inferring a state of a frictional surface of said synchronizer and switching said first shift mode and said second shift mode according to a parameter indicating said detected or inferred state.

12. A car control method loading an automatic transmission having a plurality of gears and a plurality of synchronizer capable of transferring torque from a drive power source to wheels via a friction clutch, an input shaft, and an output shaft and transferring said torque from said input shaft to said output shaft and having synchronizeres capable of transferring said torque by friction to said plurality of synchronizer, said car control method having a first mode for carrying out shifting by forming a torque transmission path from said input shaft to said output shaft by connection of said gears and said synchronizer, when switching said connection of said gears and said synchronizer from the first connection to the second connection, in a state that said friction clutch is engaged, by at least one synchronizer, transferring said torque of said drive power source from said input shaft to said output shaft, and switching a transfer path formed by said first connection to at least one intermediate transfer path formed by said synchronizer and then switching to a transfer path formed by said second connection and a second mode for carrying out shifting by, when switching said connection of said gears and said synchronizer from the first connection to the second

connection, in a state that said friction clutch is engaged, switching a transfer path formed by said first connection to a transfer path formed by said second connection, comprising the step of:

detecting or inferring a state of a frictional surface of said synchronizer and reducing said torque of said drive power source according to a parameter indicating said detected or inferred state or switching said first shift mode and said second shift mode according to a parameter indicating said detected or inferred state.